Technical Solutions for the D-Block

August 28, 2008

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Agenda

- Nationwide Interoperability
  - National Platform Solution Network
- Coverage
  - Propagation, Building penetration and data throughput
  - RF Coordination
- Reliability
  - Network Availability

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Nationwide Interoperability

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A unique opportunity for Public Safety…

- ***The opportunity:***
  - Develop the framework for a nationwide, interoperable broadband wireless network under a partnership between public safety agencies and commercial operators
- ***The solution:***
  - A *National Platform Solution* for Public Safety integrated via a partnership of commercial operator networks

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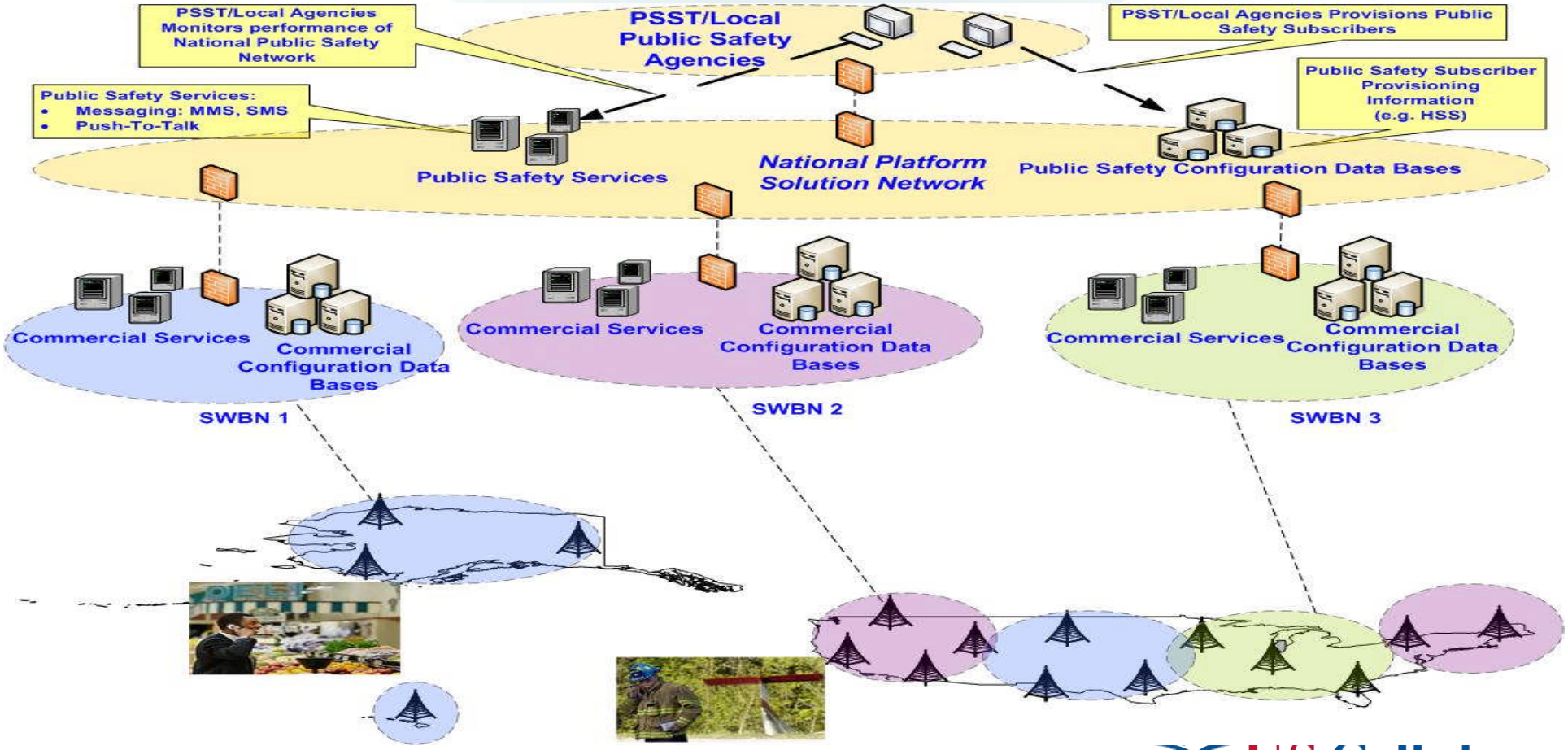
National Platform Solution for Public Safety



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National Public Safety Network

- ***National Platform Solution Network key elements:***
  - Centralized framework for provisioning of all Public Safety users
  - Dedicated application servers for Public Safety users
  - Public Safety Services are supported nationally and accessed via the area D-block networks
  - Roaming ensures reliable and consistent operations throughout the national D-Block footprint

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Summary of the National Platform Solution Network

- Provides nationwide interoperability of services for the Public Safety users
- Allows all Public Safety users to be provisioned on a centralized platform
- D-Block operators have one central source to authenticate Public Safety users

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Coverage

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Signal Coverage and Performance

- Section 27.1305 (b) and Tables 1a and 1b define the signal coverage and performance for both voice and data services
- Voice signal performance
  - Per Morphology: 22 dB to 6 dB
  - Cell Area Reliability: 95% Area
  - Cell Loading: 70% loaded
- Data signal performance
  - On-street Cell-edge Throughput
  - Cell Area Reliability

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Table 1a to 27.1305 - Voice Propagation and Capacity Parameters			
Morphology	In-Building Penetration Margin	Cell Coverage Area Reliability	Sector Loading Factor
Dense	22 dB	95%	70%
Urban	19 dB	95%	70%
Suburban	13 dB	95%	70%
Rural	6 dB	95%	70%
Highway	6 dB	95%	70%

Table 1b to 27.1305 - Data Propagation and Capacity Parameters				
Morphology	Cell Coverage Area Reliability	Sector Loading Factor	Forward Link Throughput On-Street Single user Average Cell-edge	Reverse Link Link Throughput On-Street Single user Average Cell-edge
Dense	95%	70%	256 kbps	256 kbps
Urban	95%	70%	256 kbps	256 kbps
Suburban	95%	70%	128 kbps	128 kbps
Rural	95%	70%	128 kbps	128 kbps
Highway	95%	70%	64 kbps	64 kbps

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RF Coordination at Market Borders

- There are numerous precedents in use today for border coordination procedures
- Frequency coordination, cell site placement, power limitations and careful design of antenna coverage are already used
- A common technology for the D-Block could support efficient service handoff on market borders

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Network Availability and Security

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Availability Challenges

- A highly available wireless network is driven by base station availability
- Weather-related occurrences such as flooding, icing, and wind are typical causes of base station outages and extend restoration times
- Network Availability can be achieved at the 99.6% level when events outside the control of the licensee are excluded

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Security

- Commercial technologies can provide public safety and government agencies users with significant security and can be modified to incorporate additional security features to meet Public Safety needs
- Commercial technologies provide security and protection against eavesdropping, interference, jamming, and detection
- In the event that a greater need for security measures are required beyond those already commercially available, they should be included in the NSA

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